

Application No. 10/825737 (Docket: CNTR.2210)
37 CFR 1.111 Amendment dated 08/16/2006
Reply to Office Action of 05/16/2006

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REMARKS/ARGUMENTS

In the Office Action, the Examiner noted that claims 1-20 are pending in the application. The Examiner additionally stated that claims 1-20 are rejected. By this amendment, claims 1-3, 7, 9, and 15-17 are amended. Hence, claims 1-20 are pending in the application.

Applicant hereby requests further examination and reconsideration of the application, in view of the foregoing amendments.

In the Specification

Applicant has amended the specification to secure a substantial correspondence between the claims amended herein and the remainder of the specification. No new matter is presented.

In the Claims

Rejections Under 35 U.S.C. §102(e)

The Examiner rejected claims 1-5, 7-13, and 15-18 under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mitchell et al., U.S. Patent No. 7,006,943 (hereinafter, "Mitchell"). Applicant respectfully traverses the Examiner's rejections.

In regard to claims 1, 4, 5, 7, 10, 12, 13, 15, and 18, the Examiner remarked that Mitchell discloses a method and apparatus for using an on-board temperature sensor on an integrated circuit or a microprocessor. The Examiner referred Applicant to figs. 1 and 4, and noted that the device comprises a microprocessor 101, 401, temperature sensor 103 providing on-die thermal monitoring to measure the temperature of the die, temperature limit registers 105, compare logic 107, and cooling device 109 or fan 405.

In regard to claims 2, 3, 8, 9, 16, and 17, the Examiner noted that Mitchell discloses the can turn on and off the fan (col. 1, line 19) and control the speed of the fan (col. 5, line 9).

In regard to claim 11, the Examiner remarked that it would have been obvious to one of ordinary skill in the exercise art to substitute the prior art recognized equivalent one for other. In re Fout, 675 F.2d 297, 301, 213 USPQ 532, 536 (CCPA 1982).

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Claim 1 is repeated below for ease of reference:

1. A microprocessor with temperature control, comprising:

a microprocessor die with an external interface for externally providing a variable fan control signal; and

fan control logic, provided on said microprocessor die, that provides said variable fan control signal based on temperature information associated with the microprocessor, wherein said variable fan control signal is directly coupled to an external fan to directly control said external fan.

Applicant respectfully disagrees with the Examiner's rejection of claim 1 and characterization of the cited art because Mitchell fails to teach a variable control signal and furthermore Mitchell does not teach or suggest that the variable control signal is directly coupled to an external fan to directly control the external fan. Figure 4 of Mitchell is shown below where it is clearly depicted that signal TALERT is a binary signal that is coupled to an AND gate 407, thus qualifying the GPOn signal that controls fan 405.

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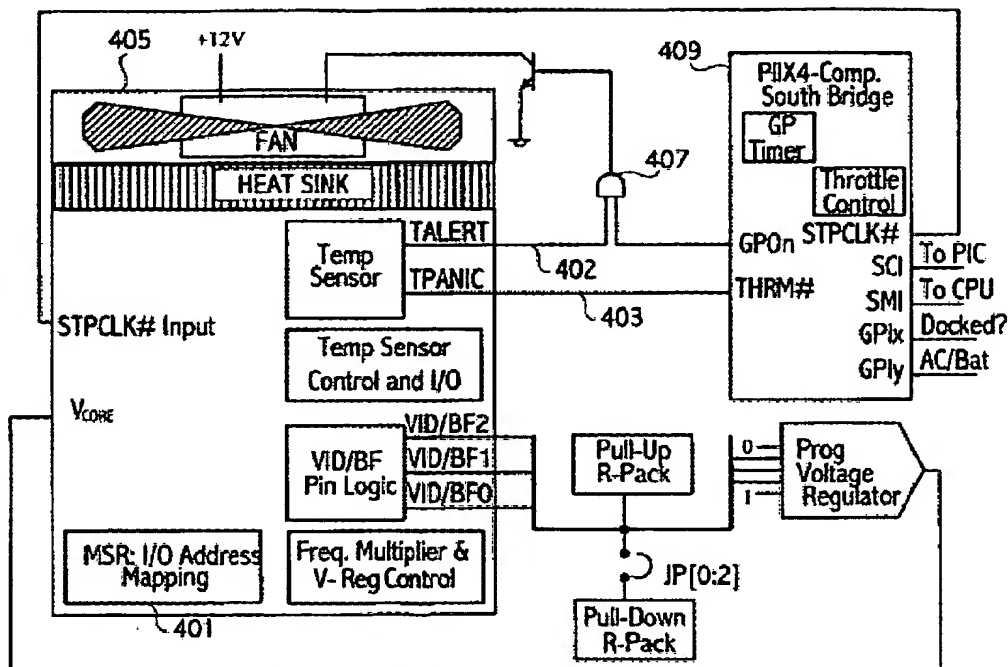


FIG. 4

Mitchell furthermore states that processor 401 supplies TALERT output signal 402, which is coupled to directly control the speed of fan 405 through AND gate 407. (col. 5, lines 8-10).

Since Mitchell fails to teach, suggest, or even hint at the above-noted elements recited in claim 1, Applicant respectfully requests that the rejection of claim 1 be withdrawn.

With respect to claims 2-5, these claims depend from claim 1 and add further limitations that are neither anticipated nor made obvious by Mitchell. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejections of claims 2-5.

Claim 7 recites substantially the same limitations as have been argued above in traversal of the rejection of claim 1. Consequently, it is requested that the rejection of claim 7 be withdrawn.

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With respect to claims 8-13, these claims depend from claim 7 and add further limitations that are neither anticipated nor made obvious by Mitchell. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejections of claims 8-13.

Claim 15 recites substantially the same limitations as have been argued above in traversal of the rejection of claim 1 as well. Consequently, it is requested that the rejection of claim 15 be withdrawn.

With respect to claims 16-18, these claims depend from claim 15 and add further limitations that are neither anticipated nor made obvious by Mitchell. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejections of claims 16-18.

Rejections Under 35 U.S.C. §103(a)

The Examiner rejected claims 6, 14, 19, and 20 under 35 U.S.C. 103(a) as being unpatentable over Mitchell in view of Hussain et al., U.S. Patent No. 6,172,611 (hereinafter, "Hussain"). More specifically, the Examiner noted that Mitchell discloses the invention substantially as claimed. However, the Examiner conceded that Mitchell does not disclose temperature information from external interface, but that Hussain discloses a temperature sensor that is remote from or external to thermal management IC 140 in the same field of endeavor for the purpose of temperature control. The Examiner concluded that it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Mitchell with an external sensor in view of Hussain so as to control the temperature.

Applicant respectfully traverses the Examiner's rejections and offers that since Mitchell does not teach a variable control signal that the variable control signal is directly coupled to an external fan to directly control the external fan, it does not follow that Mitchell can be combined with Hussain to render obvious the elements of claims 1, 7, or 15. And since claims 6, 14, 19, and 20 depend from claims 1, 7, or 15 (as appropriate) and add further limitations over that which has been argued as being allowable over the cited art, Applicant respectfully requests that the rejections of claims 6, 14, 19, and 20 be withdrawn.

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The Examiner rejected claims 1-5, 7-13, and 15-18 under 35 U.S.C. 103(a) as being unpatentable over Moyal, JP07209091 (hereinafter, "Moyal") in view of Seesemann, U.S. Patent No. 6,384,733 (hereinafter, "Seesemann"). Applicant respectfully traverses the rejections.

With specific reference to claims 1-5, 7-10, 12, 13, and 15-18, the Examiner noted that Moyal discloses a sensing signal generating device for temperature of microprocessor. Referring Applicant to Figs.1 and 2, the Examiner stated that the device comprises a microprocessor 10, temperature sensor 15, and control circuit 28. The temperature sensor 15 is embedded in the integrated circuit. The control circuit controls the fan speed. The temperature sensing elements comprise diodes 42 and 44. The Examiner remarked that Moyal discloses the invention substantially as claimed, but does not disclose fan arrangement. The Examiner added that Seesemann discloses fan arrangement in the same field of endeavor for the purpose of cooling the microprocessor. The Examiner concluded that it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Moyal with a fan arrangement in view of Seesemann so as to cool the microprocessor.

Applicant notes that Moyal, like Mitchell, fails to teach a variable control signal and or that the variable control signal is directly coupled to an external fan to directly control the external fan. Moyal teaches that the control signal is generated by the control circuit, if a temperature signal exceeds a threshold. Furthermore, Moyal notes that the equipment 15 includes a hysteresis circuit 26 which presents the ON/OFF cycle of the control signal in the control signal output 29. (paragraphs [0019] - [0020]) These statements clearly teach that the control output signal 29 is not variable. In paragraph [0023], Moyal further elaborates that the control circuit 28 compares the signal of the constant source output 25 of a signal with the signal of the impedance control circuit 27 preferably and that when the signal of the impedance circuit output 27 is larger than the signal of the constant source output 25 of a signal, a control circuit 28 give a control signal with the control circuit output 29. These further statements make certain that Moyal's control signal is not variable.

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Since Moyal fails to teach a variable control signal and that the variable control signal is directly coupled to an external fan to directly control the external fan, it does not follow that Moyal can be combined with Seesemann to render obvious the limitations of claims 1, 7, or 15. Consequently, Applicant requests that the rejections of claims 1, 7, and 15 be withdrawn.

With respect to claims 2-5, 8-13, and 16-18 these claims depend from claims 1, 7, and 15, respectively, and add further limitations over that which has been argued above as being allowable over the cited references. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejections of claims 2-5, 8-13, and 16-18.

The Examiner also rejected claims 6, 14, and 19-20 under 35 U.S.C. 103(a) as being unpatentable over Moyal/Seesemann as applied to claims 1, 7, and 15 above, and further in view of Hussain. Applicant respectfully traverses and notes that neither Moyal, Seesemann, nor Hussain teach, suggest, or allude to a variable control signal and that the variable control signal is directly coupled to an external fan to directly control the external fan. Therefore, it is requested that the rejections of claims 6, 14, and 19-20 be withdrawn.

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CONCLUSIONS

In view of the arguments advance above, Applicant respectfully submits that claims 1-20 are in condition for allowance. Reconsideration of the rejections is requested, and allowance of the claims is solicited.

Applicant earnestly requests that the Examiner contact the undersigned practitioner by telephone if the Examiner has any questions or suggestions concerning this amendment, the application, or allowance of any claims thereof.

I hereby certify under 37 CFR 1.8 that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office on the date of signature shown below.

Respectfully submitted,
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08/16/2006

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